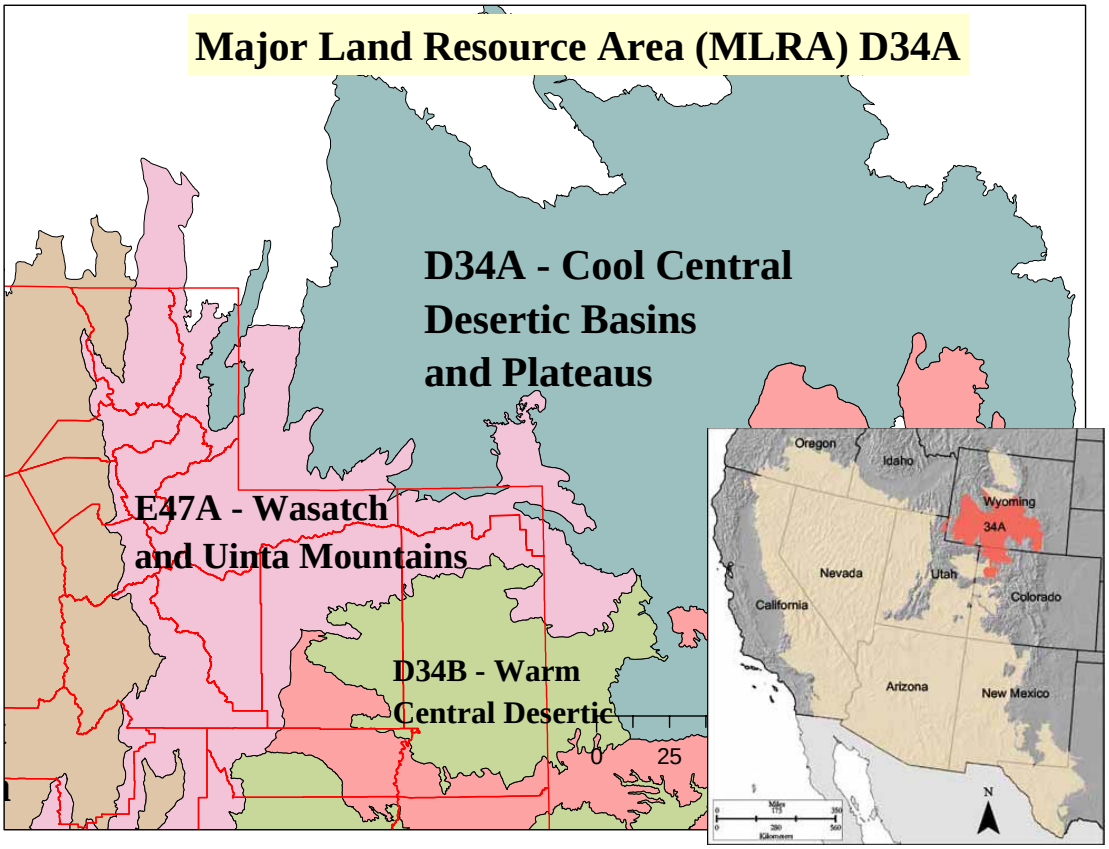
MLRA 34A – Cool Central Desertic Basins; Mountains; and Plateaus

MLRA 34A – Cool Central Desertic Basins; Mountains; and Plateaus (Utah portion)

Ecological Zone	Desert	Semidesert*	Upland*	Mountain
Precipitation		7 -9 inches	10-14 inches	
Elevation	NONE	5,200 – 7,000	6,000 – 8,000	NONE
Soil Moisture Regime		Aridic Ustic	Ustic Aridic	
Soil Temp Regime		Frigid	Frigid	
Freeze free Days		50-90	50-100	
Notes		Wyoming big sage is typical. 300 - 700 lbs/ac	Wyoming big sagebrush with snowberry and serviceberry are typical. 600 - 1500 lbs/ac	

*the aspect (north or south) can greatly influence site characteristics.

All values in this table are approximate and should be used as guidelines. Different combinations of temperature, precipitation and soil type can place an ecological site into different zones.



34A—Cool Central Desertic Basins and Plateaus

This area is in Wyoming (85 percent), Colorado (13 percent), and Utah (2 percent). It makes up about 33,005 square miles (85,525 square kilometers). The cities of Laramie, Pinedale, Rawlins, and Rock Springs, Wyoming, and Craig and Meeker, Colorado, occur in this MLRA. Interstate 80 bisects the northern part of the MLRA.

Physiography

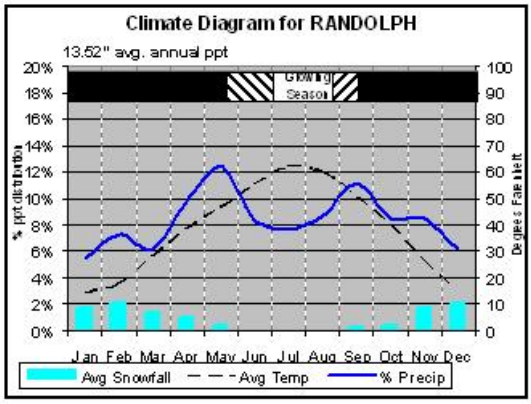
About 85 percent of this area is in the Wyoming Basin Province of the Rocky Mountain System, 5 percent is in the Middle Rocky Mountains Province of the Rocky Mountain System, and 10 percent is in the Uinta Basin Section of the Colorado Plateaus Province of the Intermontane Plateaus. The part of the area in the Uinta Basin Section is in Colorado. The Wyoming Basin is bounded on most sides by mountains. The Owl Creek Mountains, the Big Horn Mountains, and the Wind River Range are to the north; the Salt Range and Wasatch Mountains are to the west; and the Laramie and Sierra Madre Mountains are to the east. The part of the MLRA in Colorado is
bounded on the south by the Roan Plateau, on the east by the Elkhead Mountains, and on the west by Dinosaur National Monument. In most of the MLRA, elevation ranges from 5,200 feet (1,585 meters) to 7,500 feet (2,285 meters). Small mountainous areas have an elevation as high as 9,200 feet (2,805 meters). The extent of the Hydrologic Unit Areas (identified by four digit numbers) that make up this MLRA is as follows: Great Divide-Upper Green (1404), 47 percent; North Platte (1018), 28 percent; White-Yampa (1405), 16 percent; Bighorn (1008), 6 percent; Bear (1601), 2 percent; and Powder-Tongue (1009), 1 percent. The Popo Agie, Sweetwater, Laramie, Green, and North Platte Rivers run through the northern part of this MLRA, and the Little Snake, Yampa, and White Rivers run through the southern part.

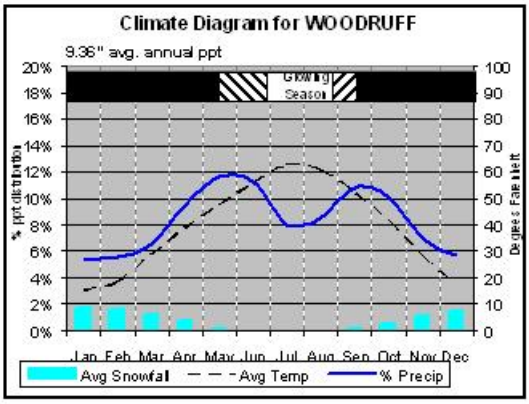
Geology

This area is dominated by residual basin-floor geologic materials. Shale and sandstone are the dominant rock types. The Tertiary-age Bridger, Laney, Green River, Wasatch, Wind River, and Browns Park Formations dominate the MLRA. Cretaceous-age formations occur as small areas throughout the MLRA. The dominant Cretaceous formations are the Lewis and Lance Formations and the members of the Mesa Verde Group. Quaternary alluvial and eolian deposits occur throughout the MLRA. Glacial deposits occur primarily on outwash terraces in the vicinity of Pinedale, Wyoming. The small mountain ranges in this MLRA are made up of
Precambrian igneous and metamorphic rocks.

Climate

The average annual precipitation generally is 7 to 12 inches (180 to 305 millimeters), but it ranges from 7 to 32 inches (180 to 815 millimeters). Much of the precipitation occurs as snow from October through April and as rain from May and September. These precipitation events occur as a result of cold fronts moving through the area. Occasional convective thunderstorms produce small amounts of rain during the period June through September. The driest period is usually June through August. The average annual temperature generally is 40 to 44 degrees F (5 to 7 degrees C), but it ranges from 33 to 47 degrees F (0 to 8 degrees C). The frost-free period averages
105 days and ranges from 45 to 160 days. The shortest frost free periods occur at the highest elevations.





Water

Following are the estimated withdrawals of freshwater by use in this MLRA:

Public supply—surface water, 0.3%; ground water, 0.3%
Livestock—surface water, 0.2%; ground water, 0.2%
Irrigation—surface water, 89.7%; ground water, 5.1%
Other—surface water, 2.8%; ground water, 1.4%

The total withdrawals average 2,590 million gallons per day (9,805 million liters per day). About 7 percent is from groundwater sources, and 93 percent is from surface water sources. Water is scarce in much of the MLRA. Irrigation water is available, however, along the few rivers that bring water into the area from the adjoining mountains. Numerous reservoirs store snowmelt runoff for later use in the growing season. The surface water is of good quality. It is suitable for almost all uses with minimal treatment. Ground water supplies are meager and little developed in much of this area. A large area of irrigated cropland is along the Bear River, in the northwest corner of the part of this MLRA in Utah. Ground water from the unconsolidated valley fill is pumped for irrigation. This water typically contains less than 1,000 parts per million (milligrams per liter) total dissolved solids and is suitable for almost all uses. Two aquifers are in the part of this area in Wyoming. One is a sand-and-gravel aquifer that is equivalent to the High Plains (Ogallala) Aquifer farther east. Water from the sand-and-gravel aquifer contains less than 500 parts per million total dissolved solids (milligrams per liter) and is moderately hard. It is used for public and domestic supply, livestock, and irrigation. Water also occurs at greater depths in the structural basin aquifer, which is the most extensive and widely used aquifer in this area. It has lenticular beds of sandstone, coal, and shale that can exceed 5,000 feet in thickness. Because of a median level of 1,100 parts per million total dissolved solids (milligrams per liter), the water from this aquifer generally is unsuitable for public supplies. The water is used for domestic supply, livestock, and some irrigation.

Soils

The dominant soil orders in this MLRA are Aridisols and Entisols. Some representative suborders are Argids, Cambids, Orthents, Fluvents, and Psamments. The most extensive and representative great groups are Haplargids (Forelle, Ryan Park, Ryark, and Maysprings series), Haplocambids (Poposhia series), Torriorthents (Blazon series), Natrargids (Tisworth series), Calciargids (Rock River series), Torrifluvents (Cowestglen and Battlement series), and Torripsamments (Coyet series). The dominant soil temperature regime is frigid, and the dominant soil moisture regime is aridic. The soils receiving less than 8 inches (205 millimeters) of precipitation annually have
an aridic soil moisture regime. The soils receiving 8 to 14 inches (205 to 355 millimeters) have an aridic soil moisture regime that borders on ustic. The soils receiving 14 to 16 inches (355 to 405 millimeters) have an ustic soil moisture regime that borders on aridic. On the lower slopes of the minor mountain ranges, the soils that receive 16 to 20 inches (405 to 510 millimeters) of precipitation generally have a frigid soil temperature regime and an ustic soil moisture regime. The soils at the highest elevations in the small mountain ranges have a
cryic soil temperature regime and a udic soil moisture regime that borders on ustic. Some soils with a mesic soil temperature regime occur at the lowest elevations in the southern part of the MLRA. Soils with mixed or smectitic mineralogy are dominant. Many of the soils are shallow or moderately deep to shale or sandstone bedrock. Many formed in slope alluvium or residuum derived from shale or sandstone. Soils that formed in stream- or river-deposited alluvium are near the major waterways. Most of the soils are well drained. Most are calcareous.

Biological Resources

The kind of vegetation varies from one precipitation zone to another in this MLRA. In a salt desert zone in small areas receiving less than 8 inches (205 millimeters) of annual precipitation, the representative plant species are Gardner’s saltbush, mat saltbush, greasewood, shadscale, bud sagebrush, winterfat, Indian ricegrass, and western wheatgrass. Wyoming big sagebrush may occur but only as a few widely spaced plants. A semi-desert grass-shrub zone, the largest in the MLRA, is characterized by a vast sagebrush steppe. This zone occurs in the areas receiving 8 to 16 inches (205 to 405 millimeters) of annual

precipitation. The representative vegetation includes Wyoming big sagebrush, early sagebrush, antelope bitterbrush, bluebunch wheatgrass, western wheatgrass, prairie junegrass, needleandthread, and Indian ricegrass. Utah juniper may occur in small areas. Cottonwood and willows grow in riparian zones along the major perennial streams and rivers. A foothill-mountain zone in Wyoming is in the narrow mountain ranges that receive more than 16 inches (405 millimeters) of annual precipitation. The vegetation on these ranges includes ponderosa pine, limber pine, lodgepole pine, and Engelmann's spruce and an understory of big sagebrush, Oregon-grape, Saskatoon serviceberry, antelope bitterbrush, bluebunch wheatgrass, and Idaho fescue. Another small zone in this MLRA occurs on the high plains grasslands near Laramie, Wyoming. This zone is dominated by cool-season grasses, such as bluebunch wheatgrass, green needlegrass, muttongrass, and western wheatgrass. Big sagebrush is conspicuously absent in this area. A lower foothill-mountain zone along the southern boundary of Wyoming and in Colorado occurs on the higher hills and mesas receiving more than 12 inches (305 millimeters) of annual precipitation. This zone is characterized by forested areas of Utah juniper with lesser amounts of pinyon pine and with an understory of Gambel oak, Wyoming big sagebrush, mountain mahogany, muttongrass, needleandthread, prairie junegrass, and Indian ricegrass. Some of the major wildlife species in this MLRA are whitetailed prairie dog, white-tailed jackrabbit, desert cottontail rabbit, coyote, red fox, badger, pronghorn, mule deer, elk, sage grouse, golden eagle, bald eagle, screech owl, common raven, sage sparrow, Brewer's sparrow, western rattlesnake, and bull snake.

Land Use

Following are the various kinds of land use in this MLRA:

Cropland—private, 2%
Grassland—private, 27%; Federal, 67%
Forest—Federal, 1%
Urban development—private, 1%
Other—private, 1%; Federal, 1%

A little more than two-thirds of this area is Federally owned. The rest is in private ranches. Most of the land is used for grazing by sheep and cattle. Hunting also is an important land use. The rangeland consists of shrubs and cool-season grasses. About 2 percent of the area is cropland. Areas of irrigated hay and pasture occur mostly along the few large rivers or streams. Nonirrigated small grain crops are grown in small areas near Craig and Meeker, Colorado, where the annual precipitation is more than 13 inches (330 millimeters), the frost-free period is more than 75 days, the soils commonly are deep, and grainmarketing facilities are nearby.

The major soil resource concerns are erosion, salinity, and water quality in streams and rivers. The availability of water for crops and livestock limits agricultural production. The main management concerns on rangeland are wind erosion, gully erosion, invasive species, and declining rangeland health. The main concerns on cropland are salinization and declining water tables. Conservation practices on rangeland generally include erosion control, fencing, development of watering facilities, brush management, rangeland seeding, and proper grazing management. The conservation practices that are important on cropland are those that reduce the hazard of erosion and improve the efficiency of irrigation water use. Conservation practices on hayland and pasture are improvement of the efficiency of irrigation systems, irrigation water management, and forage harvest management.